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ABSTRACT

In recent years, educational research and development has focused increased attention on ways of enhancing the instructional value of tests. This ERIC Digest summarizes some of the recent advances in linking instruction and assessment. Studies of teacher effectiveness indicate how important systematic assessment of student progress and use of test information is in making instructional decisions. Three functions are at the heart of integrating teaching and testing in the classroom: (1) diagnosing student knowledge and skill level before instruction; (2) monitoring student learning progress; and (3) providing regular feedback to students. Item banks, developed by various regional and national groups, facilitate linking of tests to instruction. Adaptive testing, in which the items given to a student depend on the student's previous performance, provides a more precise indication of where a student stands in a learning area. Tests based on modern cognitive theory illuminate previously hidden aspects of student thinking and performance. Articles appearing in a number of diverse publications discuss the need for more useful professional development programs for teachers on testing. The ERIC data base has references on learning, adaptive testing, teacher effectiveness, school effectiveness, mastery learning, test item banks, and curriculum-aligned tests. (LMO)

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ERIC DIGEST

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Trends in Integrating Teaching and Testing

In recent years, educational research and development has focused increased attention on ways of enhancing the instructional value of tests. Promising approaches to linking instruction and assessment have been identified, and new resources supporting these approaches have been developed. The purpose of this paper is to summarize some of these recent advances.

RESEARCH ON TEACHER AND SCHOOL EFFECTIVENESS

In the past 15 years, studies have examined what elementary teachers and schools do to promote high student achievement in basic skills. Studies of teacher effectiveness indicate how important systematic assessment of student progress and use of test information is in making instructional decisions. For example, the Beginning Teacher Evaluation Study identified six functions effective elementary teachers consistently carry out. Three of these functions—*diagnosing* student knowledge and skill level before instruction, *monitoring* student learning progress, and *providing* regular feedback to students—are the heart of integrating teaching and testing in the classroom. The importance of these functions is confirmed by research on mastery learning—an instructional model emphasizing diagnosis, frequent assessment, specific feedback to students on their learning, and corrective instruction.

Research on effective schools has focused on schools as systems, rather than on individual classrooms. A consistent finding from this research is that effective elementary schools conscientiously monitor student progress toward achieving the goals in the adopted curriculum, and use test results to guide instructional improvements. The research further suggests an approach to schooling bearing a marked resemblance to a mastery learning model, but at the school level. Research on effective teachers and schools provides practical models linking instruction and testing.

ITEM-BANKING NETWORKS

If tests are to provide useful feedback on a student's learning progress, they must be closely linked to instruction. Item banking facilitates this matching. Various regional and national groups have developed banks of items and testing procedures based on specific learning goals and objectives. Item banks, some of which are now stored on computer discs, can be invaluable to schools seeking to develop curriculum-aligned test systems. For example, the Northwest Evaluation Association, a consortium of school districts and other educational agencies, has developed item banks in various school subjects. Member districts have access to these banks as well as to workshops on various aspects of instruction-related assessment. The Test Center at the Northwest Regional Education Laboratory maintains a large and varied collection of tests, item banks, and other assessment tools, loaning them to interested schools and agencies for review. Item banks and related tools can help both schools and teachers prepare tests related to the subjects and skills taught in classrooms.

ADVANCES IN THE TECHNOLOGY OF MEASUREMENT AND INFORMATION PROCESSING

Technological advances have led to new tests based on an individual's learning background and progress. One innovation is "adaptive testing," in which the items given to a student depend on the student's previous performance. In some forms of adaptive testing, if a student has problems in a specific area, detailed probes identify which component skills are the sources of difficulty. Adaptive tests are usually administered on computers. They provide a more precise picture of where a student stands in a learning area, and where strengths and weaknesses lie.

Tests are being developed that simulate decision-making situations and provide immediate feedback to students. The tests presented to pilot trainees by flight simulators

are the best-known examples of this kind of testing. The flight simulator presents challenging situations to students based on responses to previous situations. This allows trainees to see the consequences of their actions. Simulation-based testing is common in medicine and is becoming more common in other areas, although there are great difficulties in developing such tests.

Technological advances have resulted not only in new forms of testing, but in resources that help schools and teachers store, manage and use test information. Several software packages are now available for scoring criterion-referenced tests and reporting test results for specific learning goals or objectives. Such technology is crucial for schools seeking to monitor student learning and to use test results as a guide to instructional improvement.

TESTS THAT REFLECT THE NATURE OF LEARNING

In the last decade, much has been discovered about how students learn particular subjects. This knowledge increasingly guides the design of tests. For example, the Center for the Study of Reading developed a reading test for Illinois reflecting recent research on reading comprehension. The test questions ask about aspects of reading comprehension tests rarely addressed, such as the content knowledge students bring to reading and the "metacognitive" strategies students use to manage and adjust their reading behaviors. Similar tests exist in elementary mathematics. Excellent summaries have been written on advances in cognitive theory that will have a major effect on designing future learning assessments. Tests based on modern cognitive theory will illuminate previously hidden aspects of student thinking and performance.

IN-SERVICE PROGRAMS

Publications as diverse as the *Journal of Teacher Education* and the *Journal of Educational Measurement* contain articles on the need for more useful professional development programs for teachers on instruction-related testing. Historically, teacher education programs have neglected this topic. Fortunately, attempts are being made to improve teachers' ability to link instruction and testing. Efforts also are underway to train school principals in implementing "outcome-based" instructional programs, requiring them to interpret and act on test information. A challenge for professional training programs will be to demonstrate how school principals and teachers can bring together a variety of innovations in teaching and testing. Staff development probably will focus not only on individual innovations but also on ways of combining these innovations so they support each other.

CONCLUSION

The value and feasibility of linking instruction and testing is becoming clearer, thanks to research on effective teachers and schools, the growing availability of item banks, advances in the psychology of learning, the technology of measurement and information processing, and increased sensitivity to staff development needs. There is good reason to believe that testing in the 1990s will be a partner to teaching and a genuine aid to learning.

The ERIC data base has references on learning, adaptive testing, teacher effectiveness, school effectiveness, mastery learning, test item banks, and curriculum-aligned tests. Contact our User Services coordinator to find out more about using ERIC.

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Oregon State System of
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FURTHER READING

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